VISION BASED TARGET TRACKING GUN TURRET

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Abstract

This project explores the task of tracking a moving target (aircraft) and pointing an anti aircraft gun perched on a pan tilt base in a real time combat environment. The purpose of this process is to study the dynamics of the mechanism, controlling requirements, software requirements and subsystems requirements needed for the implementation of a commercially viable air defense system. A laboratory model is developed to represent the pan-tilt gun turret, dynamically analyzed, controllers designed and field testing carried out. Though the system is designed as a laboratory model, every attempt is made to reach the level of sophistication and detail required for a military grade target tracking system. The thesis formulates a clearly identifiable procedures and steps which need to be carried out in the implementation of such a system. Due to the obvious unavailability of target tracking data from a radar system, target position information from machine vision software is used. The scope of the project is limited to; designing the interface between Camera, CPU and servo-controllers, designing the mounting base for the artillery with the pan-tilt mechanism, Modeling the plant and designing the ,controller.

Field testing reveals the validity of the procedures mentioned above and the satisfactory results obtained through such procedure.